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| **Brueckner Lab-Specific Standard Operating Procedure (LSOP)****Isopropanol-KOH Bath – Man Eater bath – Base Bath** |
| **Principal Investigator(PI):** Christian Brueckner |
| **Building:** Chemistry | **Lab(s) Covered by LSOP:** R413/R415 |
| **Department:** Chemistry | **Lab Phone Number(s):** 6-6596/6-6598 |
| **Chemical** | **GHS Pictograms** | **Definitions** |
| ***i*PrOH/KOH Bath** |  | **Corrosion –** causes irreversible damage to living tissue, including, but is not limited to, skin or ocular damage.**Flammable** |
| **SECTION 1 – HAZARDOUS CHEMICAL(S) or PROCESS(ES) and HAZARDS INVOLVED** |
| Commonly referred to as a base bath, it is used to clean glassware when regular detergent-based aqueous baths fail. It is a highly concentrated KOH solution used to dissolve contaminated glass surfaces. The isopropanol portion of the base baths is flammable. Flash fires may occur in the presence of ignition sources. The aqueous KOH portion highly corrosive. Fumes are harmful if inhaled over extended periods of time; the bath solution is extremely hazardous when ingested - may cause irreversible damage to the digestive tract, or when brought into contact with the skin or eyes. Skin contact causes burns and irritation; prolonged exposure may cause dermatitis. Eye contact may result in burns, irritation, and blindness. |
| **SECTION 2 – ADMINISTRATIVE CONTROLS** |
| List the administrative controls in place to limit exposure. E.g.: Are “dry runs” of experiments needed? Can less hazardous chemicals be substituted? Is all applicable emergency equipment present and working properly?* Anyone using the chemicals and procedures described herein needs to have undergone the annual EH&S [Chemical Hygiene Training](http://www.ehs.uconn.edu/Chemical/?p=training):
* Be aware of the applicable safety data sheets (SDS): <http://www.msds.com>
* [Working Alone](http://policy.uconn.edu/2012/07/30/working-alone-policy/) is not permitted when using chemicals or processes described in this LSOP
* The base bath needs to be clearly labelled as such
* A **DESIGNATED AREA** (next to the window-side sink in R413) must be established where KOH/*i*PrOH work can take place.
* An eyewash and safety shower must be in the immediate work area where the base bath is used
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| **SECTION 3 – ENGINEERING CONTROLS** |
| * All work with the base bath must be conducted at the sink at the window side of R413.
* A secondary metal containment is required for the plastic base bath to sit in
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| **SECTION 4 – WORK PRACTICES** |
| All containers of KOH/*i*PrOH must be clearly labeled with the chemical name and hazard classes and kept tightly-sealed.All soiled glassware should be prewashed with appropriate solvents to get the glassware as clean as possible before it gets into the base bath Drown glassware completely in the base bath; make sure it does not splash in the processDo not leave glassware in the base bath for weeks, days is enough – glass slowly dissolves in the bath, getting blind and rough; glass frits dissolve quickly, they should not go in at all.Avoid splashing round in the base bath by moving glass ware carefully or lifting the inner sieve out slowly.To retrieve glass ware, use long tongs.Once you take items out of the base bath, rinse immediately with copious amounts of water. |
| **SECTION 5 – PERSONAL PROTECTIVE EQUIPMENT (PPE)** |
| * At a minimum, a lab coat, long pants as well as closed-toed footwear and chemical safety glasses that meet ANSI standard Z-87.1 must be worn when handling the base bath and/or retrieving materials from the base bath.
* Well-fitted chemical splash goggles are recommended when working with the base bath.
* The use of a rubber apron is recommended when working with the base bath.
* Nitrile Gloves must be worn while handling a single item from the base bath; latex gloves will not provide adequate protection to the hands.
* Neoprene gloves with long cuffs (“opera gloves”) must be worn when preparing the base bath, retrieving larger number or larger items from the base bath.
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| **SECTION 6 – STORAGE** |
| * The base bath is mixed up in place at the sink.
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| **SECTION 7 – SPILL AND ACCIDENT PROCEDURES** |
| * If the base bath container fails or tips over in the lab, warn others in the lab and evacuate the laboratory immediately
* Close door(s) to lab and post a “**NO ENTRY**” sign(s) explicitly mentioning the type of hazard
* Activate the fire alarm and call **911** in case of a large (>1000 mL) spill and explicitly mentioning the type of hazard
* Do not re-enter area until instructed to do so by an emergency personnel

**Report any incident to the PI and fill out the** [**accident form**](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiF3bPe1dPXAhVRRN8KHX4wDf4QFggmMAA&url=https%3A%2F%2Fchemistry.uconn.edu%2Fwp-content%2Fuploads%2Fsites%2F1259%2F2015%2F09%2FIncident-Report-Form.doc&usg=AOvVaw3Uov8IQ2Z-Kan) |
| **SECTION 8 – FIRST AID PROCEDURES** |
| *Eyes** Immediately move to the eyewash station, hold eyelids open and flush with water. Remove contact lenses while flushing (if applicable)
* Have another person from the lab dial **911** and specifically mention caustic base exposure
* Continue flushing the eyes until emergency personnel arrive

*Skin** Immediately move to safety shower or other water source and begin rinsing affected area(s). Remove contaminated clothing (if applicable) while flushing.
* Have another person from the lab dial **911** if intense skin irritation is observed and specifically mention caustic base exposure
* Keep rinsing affected area(s) until emergency personnel arrive

*Ingestion** Immediately rinse the mouth with cold water
* Do NOT induce vomiting
* Have another person from the lab dial **911** and specifically mention caustic base exposure

*Inhalation** Move to fresh air
* Dial **911** and inform emergency responders that the accident involved isopropanol

**Report any incident to the PI and fill out the** [**accident form**](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiF3bPe1dPXAhVRRN8KHX4wDf4QFggmMAA&url=https%3A%2F%2Fchemistry.uconn.edu%2Fwp-content%2Fuploads%2Fsites%2F1259%2F2015%2F09%2FIncident-Report-Form.doc&usg=AOvVaw3Uov8IQ2Z-Kan) |
| **SECTION 9 – WASTE MANAGEMENT** |
| * All waste must be labeled with “Hazardous Waste” stickers or tags, use full chemical names to describe the waste (i.e., no chemical abbreviations or symbols), be stored in sturdy containers with tight-fitting caps or lids, and be stored alone or with other compatible chemicals
* Hazardous wastes must be stored at or near a green “Satellite Accumulation Area” sign prior to disposal by EHS. Once the containers are 80% filled, fill our EH&S chemical [waste pickup form](http://ehs.uconn.edu/Regulated%20Waste%20Management/index.php)
* The [Chemical Waste Disposal Manual](http://ehs.uconn.edu/Chemical/ChemWasteDisp.pdf) must be used as a reference
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| **SECTION 10 – DECONTAMINATION PROCEDURES** |
| Work Area | * Equipment can be decontaminated through rinse with copious amounts of water; use of surfactants is recommended.
* Check with pH paper if the surface was successfully decontaminated
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| Personal Hygiene | * Use standard chemical hygiene practices regarding PPE (see above).
* Wash hand thoroughly after handling base bath
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| **SECTION 11 – SPECIFIC PROCEDURE** |
| **Procedure for preparing a base bath** (see also: "The Chemist's Companion: A Handbook of Practical Data, Techniques, and References" A. J. Gordon and R. A. Ford, John Wiley and Sons, New York, 1972 pp 428-429. – book is in the library I R415):1. Place approximately 8 liters of isopropanol in the designated heavy-duty plastic bucket that has a tight-fitting lid.
2. To the isopropanol, carefully add about 1 kg KOH
3. You may add a little water to assist in the dissolution of the base
4. Stir gently
5. Base baths should be topped off with isopropanol/KOH as the volume or cleaning ability decreases, normally the base bath is useable for many months or years (depending on the rate of use; even a dark base bath still cleans very well)
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| **SECTION 12A. APPROVAL** |
| I have reviewed, understand and agree to follow this lab-specific standard operating procedure (LSOP) for the use of the KOH/isopropanol base bath*.* Failure to follow this LSOP or lab-specific training guidelines is a violation of the [*University Health & Safety Policy*](http://policy.uconn.edu/2011/05/19/health-and-safety-policy/) and [*University Code of Conduct*](http://policy.uconn.edu/2011/05/17/employee-code-of-conduct/).Further approval and/or review of this LSOP by the PI is required if any of the following events occur:* A significant change in amount (i.e., doubling of the scale of reaction) or substitution of the chemicals in the procedure is planned
* A major change in the agreed-upon experimental set-up is planned (heating instead of room T, etc.)
* Any signs of a failure in safety design or equipment are observed
* Any signs or symptoms of a chemical exposure to any personnel are observed
* Unexpected and/or potentially dangerous experimental results occur (e.g., fire, uncontrolled buildup of heat and/or pressure, etc.)
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| **Researcher Name/Signature** | **Trainer Name/Signature** | **Training Date** |
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| **SECTION 12B. PRINCIPAL INVESTIGATOR CERTIFICATION** |
| I approve the contents of the lab-specific standard operating procedure listed above. |
| **PI Signature:** | **Date:** |
| **A HARD OR ELECTRONIC COPY (https://bruckner.research.uconn.edu/safety-resources/) OF EACH LAB-SPECIFIC STANDARD OPERATING PROCEDURE MUST BE READILY AVAILBALE IN THE LAB.** |